

(For students admitted in 2020-21 under the 4-year degree)

## BSc in Integrative Systems and Design

In addition to the requirements of their major programs, students are required to complete the University requirements for graduation. For details please refer to the respective section on this website.

Some courses can be used to fulfill both Major and University Common Core Requirements. Students may reuse a maximum of 9 credits of these courses to count towards both Requirements.

Students may use no more than 6 credits earned from courses offered in self-paced online delivery mode to satisfy the graduation requirements of a degree program. This 6-credit limit does not apply to credits obtained through the credit transfer procedures of the University.

For students graduating with an additional major, they must take all the requirements specified for that major, within which they must complete at least 20 single-counted credits. These 20 credits cannot be used to fulfill any other requirements for graduation except for the 120-credit degree requirement.

Some courses in the curriculum have been previously coded with CORE-prefix where the special CORE-prefix has been replaced by the domain code of courses starting from Fall 2023-24. Students who have registered with these CORE-coded courses may look up their latest course codes by consulting the conversion table published on the Common Core website.

### Major Requirements

#### Required Course(s)

			Credit(s) attained
ISDN	1002	Redefining Problems for the Real Needs	3
ISDN	1004	Sketching	1
ISDN	1006	Human-centered Innovation	3
ISDN	2001	Second Year Design Project I	1
ISDN	2002	Second Year Design Project II	3
ISDN	2200	Systems Thinking and Design	3
ISDN	2300	Introduction to 3D Design	3
ISDN	2400	Physical Prototyping	3
ISDN	3001	Third Year Design Project I	3
ISDN	3002	Third Year Design Project II	3
ISDN	4001	Final Year Design Project I	4
ISDN	4002	Final Year Design Project II	4
COMP		Note: COMP 1021 <u>OR</u> COMP 1022P	3
	COMP 1021	Introduction to Computer Science	3
	COMP 1022P	Introduction to Computing with Java	3
ENGG	1010	Academic Orientation	0
LANG	2030	Technical Communication I	3
LANG	4032	Technical Communication II for IEDA and ISDN	3

MATH		Note: [MATH 1012 <u>OR</u> MATH 1013 <u>OR</u> MATH 1023 <u>AND</u> (MATH 1014 <u>OR</u> MATH 1024)] <u>OR</u> [MATH 1020] (Subject to approval of the program office, MATH 1014/1024 may be replaced by a COMP course)	4-7
MATH	1012	Calculus IA	4
MATH	1013	Calculus IB	3
MATH	1014	Calculus II	3
MATH	1020	Accelerated Calculus	4
MATH	1023	Honors Calculus I	3
MATH	1024	Honors Calculus II	3
PHYS		Note: PHYS 1001 <u>OR</u> PHYS 1111 <u>OR</u> PHYS 1112 <u>OR</u> PHYS 1312	3
PHYS	1001	Physics and the Modern Society	3
PHYS	1111	General Physics I	3
PHYS	1112	General Physics I with Calculus	3
PHYS	1312	Honors General Physics I	3

### Elective(s)

			<b>Minimum credit(s) required</b>
ISDN/ENGG/ IEDA		Design Electives (Courses from the specified elective list)	5
ISDN	2000	What is Design and Why Design?	3
ISDN	2500	Introduction to Systems Design Engineering	3
ISDN	2603	Materials, Shape and Design	3
ISDN	3200	Graphic Communication	2
ISDN	3300	Interaction Design	3
ISDN	4000L	Advanced Sketching	2
ISDN	4330	Ergonomics in Design	2
ENGG	1300	Design Thinking for Health Innovation	3
IEDA	2150	Product Design	3
IEDA	4650	Engineering Psychology	3
ISDN/ENTR/ IEDA/SBM		Product Management and Entrepreneurship Electives (Courses from the specified elective list)	9
ISDN	3350	Global Product Development	3
ISDN	3360	From Product Innovations to Successful Technology Startups	3
ISDN	4200	Product Management	3
ENTR	3100	Industrial Landscape: Understanding the Elements to Start a Business	3
IEDA	4170**	Product Design and Lifecycle Management	3
FINA	2203	Fundamentals of Business Finance	3
ISOM	1380	Technology and Innovation: Social and Business Perspectives	3
ISOM	2030	Business Protections for Innovations	3
ISOM	2700	Operations Management	3
ISOM	4020	Innovation Management and Technology Entrepreneurship	3
MARK	2120	Marketing Management	3

ISDN/SENG/ MATH		Project-related Electives (Courses from the specified elective list. Students should seek approval of their advisor for the choices of courses.)	22
ISDN	2601	Exploring the World through Smart Mechatronics	3
ISDN	2602	Internet of Things: Integrative System Design	3
ISDN	2603	Materials, Shape and Design	3
ISDN	4000G	Internet of Things	3
ISDN	4000I	Mechatronic Systems Design	3
ISDN	4000J	Introduction to EcoDesign	3
ISDN	4000K	Materials for Physical Prototyping	1
ISDN	4000L	Advanced Sketching	2
ISDN	4000M	Introduction to Embedded System Programming	1
ISDN	4000O	Extended Reality Technology and Applications	3
ISDN	4000P	Brand Design	3
ISDN	4000Q	Designing the Metaverse with Immersive Technologies	3
ISDN	4000R	Introduction to soft robotics	3
BIEN	3320	Data Science for Biology and Medicine	3
COMP	1022P	Introduction to Computing with Java	3
COMP	2011	Programming with C++	4
COMP	2012	Object-Oriented Programming and Data Structures	4
COMP	2611	Computer Organization	4
COMP	3111	Software Engineering	4
COMP	3211	Fundamentals of Artificial Intelligence	3
COMP	3311	Database Management Systems	3
COMP	3711	Design and Analysis of Algorithms	3
COMP	4021	Internet Computing	3
COMP	4221	Introduction to Natural Language Processing	3
COMP	4331	Data Mining	3
COMP	4411	Computer Graphics	3
COMP	4421	Image Processing	3
COMP	4461	Human-Computer Interaction	3
COMP	4462	Data Visualization	3
COMP	4521	Mobile Application Development	3
COMP	4632	Practicing Cybersecurity: Attacks and Counter-measures	3
COMP	4641	Social Information Network Analysis and Engineering	3
COMP	4651	Cloud Computing and Big Data Systems	3
COMP	4901	Special Topics in Computer Science	0-4
ELEC		Any ELEC courses at 3000-level	0-4
ELEC		Any ELEC courses at 4000-level	0-4
ELEC	1100	Introduction to Electro-Robot Design	4
ELEC	1200	A System View of Communications: from Signals to Packets	4
ELEC	2100	Signals and Systems	4
ELEC	2200	Digital Circuits and Systems	4
ELEC	2300	Computer Organization	4
ELEC	2350	Introduction to Computer Organization and Design	4

ELEC	2400	Electronic Circuits	4
ELEC	2600	Probability and Random Processes in Engineering	4
ENGG	1100	First Year Cornerstone Engineering Design Project Course	3
IEDA	2520	Probability for Engineers	3
MECH	2020	Statics and Dynamics	3
MECH	2040	Solid Mechanics I	3
MECH	2210	Fluid Mechanics	3
MECH	2310	Thermodynamics	3
MECH	2410	Engineering Materials I	3
MECH	2520	Design and Manufacturing I	3
MECH	3030	Mechanisms of Machinery	3
MECH	3300	Energy Conversion	3
MECH	3310	Heat Transfer	3
MECH	3420	Engineering Materials II	3
MECH	3510	CAD/CAM	3
MECH	3520	Design and Manufacturing II	3
MECH	3610	Control Principles	3
MECH	3907	Mechatronic Design and Prototyping	3
MECH	4450	Introduction to Finite Element Analysis	3
MECH	4710	Introduction to Robotics	3
MECH	4740	Numerical Methods in Engineering	3
MATH	2111	Matrix Algebra and Applications	3
MATH	2343	Discrete Structures	4
MATH	2350	Applied Linear Algebra and Differential Equations	3
MATH	2411	Applied Statistics	4

**\*\*Remarks on course(s):**

- IEDA 4170: The course was last offered in 2016-17 and was deleted subsequently.